

## **AMENDMENTS TO THE CLAIMS**

### **Claims 1-12 (Cancelled)**

**Claim 13 (Currently Amended)** ~~AAn operation method of for~~ operating a communication system comprising (i) an Nth authentication apparatus, (ii) an (N+1)th authentication apparatus, and (iii) an (N+1)th download server, ~~which are each being~~ connected over a communication network,

wherein N and (N+1) are values each indicating a number in a sequence in a case where a plurality of authentication apparatuses and a plurality of corresponding download servers are sequentially put into operation, N being an integer of 1 or larger,

wherein the Nth authentication apparatus includes:

an Nth server certificate issue unit operable to issue an Nth server certificate, ensuring that ensures validity of an application server; and

an Nth CA certificate authority (CA) information issue unit operable to issue Nth CA information including that includes an Nth CA certificate and an (N+1)th address for update, the Nth CA certificate indicating that the Nth server certificate is valid, and the (N+1)th address for update indicating a location of the (N+1)th download server on the communication network,

wherein the (N+1)th authentication apparatus includes:

an (N+1)th server certificate issue unit operable to issue an (N+1)th server certificate ensuring that ensures the validity of the application server; and

an (N+1)th CA information issue unit operable to issue (N+1)th CA information including that includes an (N+1)th CA certificate and an (N+2)th address for update, the (N+1)th

CA certificate indicating that the (N+1)th server certificate is valid, ~~and~~ the (N+2)th address for update indicating a location, on the communication network, of an (N+2)th download server on which (N+2)th CA information is placed, and the said (N+2)th CA information including an (N+2)th CA certificate to be a next valid CA certificate in a case where the said (N+1)th CA certificate is becomes revoked,

wherein the (N+1)th download server includes:

a CA information storage unit operable to store hold the (N+1)th CA information, including that includes the (N+1)th CA certificate to be a next valid CA certificate in a case where the said Nth CA certificate becomes is revoked; and

an output unit operable to output, to a communication apparatus, the (N+1)th CA information stored in the CA information storage unit, the communication apparatus being connected to the said (N+1)th download server via the communication network, and

wherein said in the operation method comprises, the following steps are repeated for N number of times, where N is 1 or a larger integer:

an Nth operation step of operating starting up the Nth authentication apparatus to place the Nth authentication apparatus in operation to issue the Nth server certificate; and issuing, via the Nth CA information issue unit of the Nth authentication apparatus, the Nth CA information including (i) the Nth CA certificate indicating that the Nth server certificate is valid and (ii) the (N+1)th address for update indicating the location of the (N+1)th download server on the communication network;

an (N+1)th operation step of operating after said starting up of the operation of the Nth authentication apparatus, starting up the (N+1)th authentication apparatus and the (N+1)th

download server to place the (N+1)th authentication apparatus and the (N+1)th download server into operation, said starting up of the (N+1)th authentication apparatus and the (N+1)th download server taking place before a validity period of the Nth CA certificate expires; and terminating the operation of the (N+1)th download server after the validity period of the Nth CA certificate expires.

**Claim 14 (Currently Amended)** The ~~operation~~-method according to Claim 13, wherein, in said starting up of the (N+1)th authentication apparatus and the (N+1)th download server, the (N+1)th operation step, the (N+1)th authentication apparatus and the (N+1)th download server are put in operation operated, when in a case where the Nth CA certificate is becomes revoked.

**Claim 15 (Currently Amended)** The ~~operation~~-method according to Claim 13, further comprising a termination step of terminating the operation of the Nth authentication apparatus and the operation of the (N+1)th download server[[],] when the a validity period of the Nth CA certificate expires.